

To: Balentine, Joshua[Joshua.Balentine@memphistn.gov]; Wilson, Scott[Wilson.Js@epa.gov]; Pickrel, Jan[Pickrel.Jan@epa.gov]
Cc: Laurel Rognstad[Laurel.Rognstad@tn.gov]; Jordan, Ronald[Jordan.Ronald@epa.gov]; Ramach, Sean[Ramach.Sean@epa.gov]
From: Shell, Karrie-Jo
Sent: Tue 4/10/2018 6:16:52 PM
Subject: RE: Steam Electric Power Generation
MAIL_RECEIVED: Tue 4/10/2018 6:16:00 PM
[image2018-04-10-114712.pdf](#)

See the first column, 3 full paragraph of the preamble to the 1982 SE regs.

Karrie-Jo Robinson-Shell, P.E.

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From: Balentine, Joshua [mailto:Joshua.Balentine@memphistn.gov]
Sent: Tuesday, April 10, 2018 2:05 PM
To: Wilson, Scott <Wilson.Js@epa.gov>; Pickrel, Jan <Pickrel.Jan@epa.gov>
Cc: Laurel Rognstad <Laurel.Rognstad@tn.gov>; Jordan, Ronald <Jordan.Ronald@epa.gov>; Shell, Karrie-Jo <Shell.Karrie-Jo@epa.gov>; Ramach, Sean <Ramach.Sean@epa.gov>
Subject: RE: Steam Electric Power Generation

Scott and Jan.

I have a quick question for you that may alleviate all of the questions surrounding my original inquiry. I have spoken with **TVA** and they interpret the regulation at 40 CFR 423.17(b) in the following way:

A steam electric power generation plant can discharge priority pollutants from the cooling towers, but the priority pollutants can't originate from the chemicals used for cooling tower maintenance.

I originally did not interpret the rule that way, and believed that there can be no discharge of priority pollutants from the cooling towers. I think maybe the answer to this would help in determining if we even need to go any further in determining an approach for permitting and compliance.

Thanks for your help and insight into this.

Joshua Balentine

Industrial Monitoring Manager

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From: Laurel Rognstad [<mailto:Laurel.Rognstad@tn.gov>]

Sent: Tuesday, April 03, 2018 8:50 AM

To: Wilson, Scott; Jordan, Ronald; Shell, Karrie-Jo; Ramach, Sean; Pickrel, Jan; Balentine, Joshua

Subject: RE: Steam Electric Power Generation

Hi Scott,

Thank you for looking into this. I've added Joshua Balentine, Memphis's Industrial Monitoring Manager, to this email. He should be able to answer your questions much better than I can.



Laurel Rognstad | State Pretreatment Coordinator

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From: Wilson, Scott [<mailto:Wilson.Js@epa.gov>]
Sent: Monday, April 02, 2018 12:52 PM
To: Jordan, Ronald; Shell, Karrie-Jo; Ramach, Sean; Pickrel, Jan
Cc: Laurel Rognstad
Subject: RE: Steam Electric Power Generation

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Laurel:

Your question was passed on to me for my thoughts on this issue and I had a couple of quick questions.

The email below says that the **TVA** effluent concentration for copper and nickel were much greater than in the intake water. Do you have data for the effluent concentrations that you could provide?

Also, did they provide information on the specific cooling tower maintenance chemicals that were used?

Thanks in advance for any information you can provide.

Scott Wilson

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From: Phillips, David

Sent: Wednesday, March 28, 2018 4:30 PM

To: Laurel Rognstad <Laurel.rognstad@tn.gov>

Cc: Jordan, Ronald <Jordan.Ronald@epa.gov>

Subject: FW: Steam Electric Power Generation

Laurel,

Unfortunately, it might be some time before I can focus on this inquiry. It might be more

expeditious for you to consult our ELG expert on Part 423 for some input on Memphis' two questions (Ron Jordan - jordan.ronald@epa.gov or 202-566-1003), whom I've copied.

David R. Phillips

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- Senior Environmental Engineer
- Regional Coordinator, Industrial Pretreatment Program

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From: Balentine, Joshua [<mailto:Joshua.Balentine@memphistn.gov>]
Sent: Wednesday, March 28, 2018 4:17 PM
To: Phillips, David <Phillips.David@epa.gov>
Cc: Laurel.Rognstad@tn.gov; King, Tasha <Tasha.King@memphistn.gov>
Subject: Steam Electric Power Generation

David,

I have a new **TVA** Steam Electric Power Generation plant that I recently permitted. The federal regs at 40 CFR 423.17(d)(1) states that the pollutants discharged in cooling tower blowdown shall have no detectable amount for the 126 priority pollutants contained in chemical added for cooling tower maintenance (excluding Chromium and Zinc). The regs go on further to allow at the permitting authority's discretion, instead of the monitoring in 40 CFR 122.11(b), compliance with the standards for the 126 priority pollutants in paragraph (a)(4)(i) of this section may

be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

TVA originally wanted to submit the Engineering Calcs that demonstrate the priority pollutants are not detectable at the final effluent. We verbally agreed that TVA would collect one set of samples to confirm that the priority pollutants were not present, and then we would approve the engineering calcs in lieu of sampling going forward. TVA's samples showed detectable values for copper (0.00228 mg/L) and nickel (0.00287 mg/L).

TVA is stating that the source of copper and nickel is not from the cooling tower chemicals, but from the source water. They have sampling data that does confirm this. Albeit, the concentrations in the source water are much lower than the values detected in the effluent. TVA claims that this is due to the evaporation of water and metals concentrating. The purpose of blowing down cooling water is due to minerals concentrating to the point that they are too high, and makeup water is added to the basin.

There are multiple options/questions I have for you to help assist me in:

1. Since TVA believes that the source of the pollutants is the source water and not the cooling tower chemicals themselves, TVA requests that the engineering calcs in lieu of monitoring state the following:

"At the discretion of the City of Memphis, instead of the monitoring, compliance with the standards for the 126 priority pollutants may be determined by engineering calculations which demonstrate that the regulated pollutants (126 priority pollutants contained in chemicals added for cooling tower maintenance) are not detectable in the final discharge by the analytical methods in 40 CFR part 136."

Please note that the red text is different than what the federal regs state at 30 CFR 423.17(b)(ii). TVA assert that this is more consistent with the development documents and the final rule publication in the federal register as shown below:

47 FR 52290 Excerpt No. 1

47 FR 52290 Excerpt No. 2

Toxics. The discharge of one hundred twenty-four toxic pollutants is prohibited in detectable amounts from cooling tower discharges if the pollutants come from cooling tower maintenance chemicals. The discharge may demonstrate compliance with such limitations to the permitting authority by either routinely sampling and analyzing for the pollutants in the discharge, or providing mass balance calculations to demonstrate that use of particular maintenance chemicals will not result in detectable amounts of the toxic pollutants in the discharge. In addition, EPA is promulgating a daily maximum BAT limitation and NSPS for chromium and zinc based upon concentrations of 0.2 mg/l and 1.0 mg/l, respectively.

Commenters objected to the proposed zero discharge requirement for maintenance chemicals, raising concerns about the regulation of maintenance chemicals instead of priority pollutants and the means of measuring compliance with a zero discharge limit. In response, we have substituted "no detectable" for "zero discharge" and made clear that the limit applies to priority pollutants from maintenance chemicals, and not the chemicals themselves. EPA presently considers the nominal detection limit most of the toxics to be 10 µg/l (i.e., 1 parts per billion). See, *Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants*, EPA, 1977.

47 FR 52290 Excerpt No. 3

Another concern expressed by commenters was that EPA did not account for those prohibited toxic amounts of certain of the toxic pollutants. These may leach for a period of time from contact with the cooling water. The Agency recognizes such are present in new construction materials for cooling towers. For situations. Thus, the prohibition in the final rule, as in the proposed rule, is applicable only to pollutants that are present in cooling tower blowdown or other construction materials in or rebuilt cooling towers may contain result of cooling tower maintenance chemicals. preservatives which contain trace chemicals.

2. Another approach could be that as long as the detectable amount is less than 0.01 mg/L (10µg/L), **TVA** could be considered compliant with the regulations, since the final rule (47 FR 52290) states that the minimum detection level required for analysis is 0.01 mg/L (10µg/L).

Commenters objected to the proposed zero discharge requirement for maintenance chemicals, raising concerns about the regulation of maintenance chemicals instead of priority pollutants and the means of measuring compliance with a zero discharge limit. In response, we have substituted "no detectable" for "zero discharge" and made clear that the limit applies to priority pollutants from maintenance chemicals, and not the chemicals themselves. EPA presently considers the nominal detection limit for most of the toxics to be 10 µg/l (i.e., 10 parts per billion). See, *Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants*, EPA, 1977.

3. Another approach could be a Net/Gross variance based on the concentrations of nickel and copper in the source water. This is a valid approach (in my opinion) since our local limits for those two parameters are substantially higher than the current limit of no detectable amount.
4. The final approach is to leave the permit like it is, and make TVA meet the no detectable amount limits for all priority pollutants.

The City of Memphis really needs EPA to weigh in on this, so TVA will accept the decision that is made. Ultimately, I think the federal regs and the federal register publication are confusing with respect to No.1. I think that the federal register vaguely supports TVA's argument that the limit applies to the final discharge but only from pollutants added from cooling tower maintenance chemicals. However I can't get past the fact that the PSNS specifically states that the pollutants discharged in cooling tower blowdown shall have no detectable amount for the 126 priority pollutants. I am not comfortable agreeing to the modification TVA requested in NO.1 without TDEC or EPA's approval. However, if you are in agreement with No. 2, this would be just as easy of an option for all parties.

I know this is an information overload, so please give me a call if you have any questions, or are extremely confused by all of this. Thanks.

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limitations based upon 0.2 mg/l daily average and 0.5 mg/l daily maximum concentrations. FAC and TRC discharges are limited to 2 hours per day per generating unit and simultaneous multi-unit chlorination is prohibited. The 1974 BAT and NSPS contain limitations equivalent to 1974 BPT, plus mass limitations for zinc, chromium, and phosphorous based upon concentrations of 1.0 mg/l, 0.2 mg/l, and 5.0 mg/l, respectively, and for PCBs. The 1974 PSNS contained no categorical pretreatment standards for cooling tower blowdown. The 1977 PSES limits oil and grease with a mass limitation based upon 100 mg/l and prohibits the discharge of PCBs.

The major technology options for this wastestream are dechlorination, chemical substitution, and chemical precipitation.

(b) *Final Limitations. BAT and NSPS. Chlorine.* EPA is promulgating BAT and NSPS limitations equivalent to the 1974 BAT and NSPS level of control. These limitations are based upon daily average and daily maximum concentrations for FAC of 0.2 mg/l and 0.5 mg/l, respectively.

Toxics. The discharge of one hundred twenty-four toxic pollutants is prohibited in detectable amounts from cooling tower discharges if the pollutants come from cooling tower maintenance chemicals. The discharger may demonstrate compliance with such limitations to the permitting authority by either routinely sampling and analyzing for the pollutants in the discharge, or providing mass balance calculations to demonstrate that use of particular maintenance chemicals will not result in detectable amounts of the toxic pollutants in the discharge. In addition, EPA is promulgating a daily maximum BAT limitation and NSPS for chromium and zinc based upon concentrations of 0.2 mg/l and 1.0 mg/l, respectively.

The existing limitation for phosphorous is deleted.

PSES and PSNS. The final regulations prohibit or limit the 128 toxic pollutants as discussed above for BAT and NSPS. Oil and grease PSES are withdrawn.

(c) *Changes from Proposal and Rationale. Chlorine.* For BAT and NSPS, EPA proposed a limitation on TRC discharges based upon a maximum concentration of 0.14 mg/l times flow. A chlorine minimization program was not required. The Agency also proposed to prohibit all discharges of cooling tower maintenance chemicals containing any of the 129 priority pollutants. Since then three of the 129 toxic pollutants have been "delisted." They are dichlorodifluoromethane,

trichlorofluoromethane, and bis-chloromethyl ether. See 46 FR 2265; 46 FR 10723.

Public comments opposed the limitations on chlorine, stating that the proposed limit was unachievable and would not result in any environmental benefit. We do not agree that the limit would be unachievable or result in no effluent reduction benefits; however we did reexamine the data pertaining to chlorine. We found that the flow of this waste stream was less than one percent of the once through cooling water flow. Further, less than 0.5 percent of the TRC which would be removed by regulating both cooling tower blowdown and once-through cooling water is attributable to cooling tower blowdown. We therefore concluded that the appropriate emphasis on chlorine control should be in the once-through cooling water waste stream and that BAT and NSPS for this waste stream should equal the previously promulgated BPT, BAT, and NSPS Limits. This will result in a cost savings of \$25 million in annual costs in 1985 and similar savings in future years.

Toxics. For BAT and NSPS, EPA proposed to prohibit any discharge of cooling tower maintenance chemical containing the 129 priority pollutants. The same prohibition was proposed for PSES and PSNS. Since equivalent pollutant removals are required for indirect and direct dischargers, EPA determined that a zero discharge pretreatment standard was the only means of assuring that no priority pollutant would pass through the POTW.

Commenters objected to the proposed zero discharge requirement for maintenance chemicals, raising concerns about the regulation of maintenance chemicals instead of priority pollutants and the means of measuring compliance with a zero discharge limit. In response, we have substituted "no detectable" for "zero discharge" and made clear that the limit applies to priority pollutants from maintenance chemicals, and not the chemicals themselves. EPA presently considers the nominal detection limit for most of the toxics to be 10 µg/l (i.e., 10 parts per billion). See, *Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants*, EPA, 1977.

Another concern expressed by commenters was that EPA did not account for those prohibited toxics that are present in new construction materials for cooling towers. For example, wooden supporting structures or other construction materials in new or rebuilt cooling towers may contain preservatives which contain trace

amounts of certain of the toxic pollutants. These may leach for a period of time from contact with the cooling water. The Agency recognizes such situations. Thus, the prohibition in the final rule, as in the proposed rule, is applicable only to pollutants that are present in cooling tower blowdown as a result of cooling tower maintenance chemicals.

Commenters also expressed concern over potentially substantial compliance costs in analyzing for the 128 toxic pollutants in their discharges. The Agency agrees that the costs of routine compliance monitoring for the toxics could be quite expensive, and that there are alternative compliance mechanisms. Therefore, as an alternative to routine monitoring by sampling and analysis of effluents, the final rule provides for mass balance calculations to demonstrate compliance with the prohibition. For example, the discharger may provide the certified analytical contents of all biofouling and maintenance formulations used and engineering calculations demonstrating that any of the priority pollutants present in the maintenance chemicals would not be detectable in the cooling tower discharge using appropriate analytical methods. The permit issuing authority shall determine the appropriate approach.

Many commenters also indicated that there are presently no acceptable substitutes for the use of chromium and zinc based cooling tower maintenance chemicals. The Agency agrees that adequate substitutes are not presently available for many facilities. This is due in part to site specific conditions, including cooling water intake quality and the presence of construction materials susceptible to fouling corrosion. Further, there is a potential for substitutes to be more toxic than the substances they are meant to replace. Therefore, the final BAT, NSPS and pretreatment standards allow for the discharge of chromium and zinc in cooling tower blowdown. The limitations are the same as those adopted in 1974 for BAT and are based upon pH adjustment, chemical precipitation, and sedimentation or filtration to remove precipitated metals.

No comments were received on the proposal to delete the phosphorous limitations; therefore, the final rule is the same as proposed.

4. *Fly Ash Transport. (a) Background.* Coal or oil that is burned in a boiler produces ash that requires disposal. The relatively fine and light-weight ash that is commonly discharged with the flue gases and collected with air pollution

